Math 356H Assignment #6 Solutions

1. Chapter 15, #24.

   ```
   Kruskal-Wallis rank sum test

   data:  Nitrogen by regimen

   Kruskal-Wallis chi-squared = 8.5956, df = 3, p-value = 0.03518
   ```

   We reject the hypothesis of equality of means at approximate $\alpha = .05$.

2. Running times (in seconds) for a group of randomly selected males who finished the New York City marathon in a recent year were partitioned into categories with ages 21-29, 30-39 and 40 or older. The Kruskal-Wallis `R` test results were:

   ```
   Kruskal-Wallis chi-squared = 0.58        df = 2        p-value = 0.747
   ```

   What are your conclusions based on the above output?

   The P-value is very high, so we fail to reject H_0. Thus the average running times of different groups are not significantly different.

3. Chapter 15, #26.

   ```
   Friedman rank sum test

   data:  permeability and treatment and block

   Friedman chi-squared = 25.68, df = 3, p-value = 1.113e-05
   ```

   We reject the null hypothesis of no effect, so that the average permeability is not the same for all four treatments.